



Product Information Sheet

TRUMBULL BUILT-UP ROOFING ASPHALT

Description

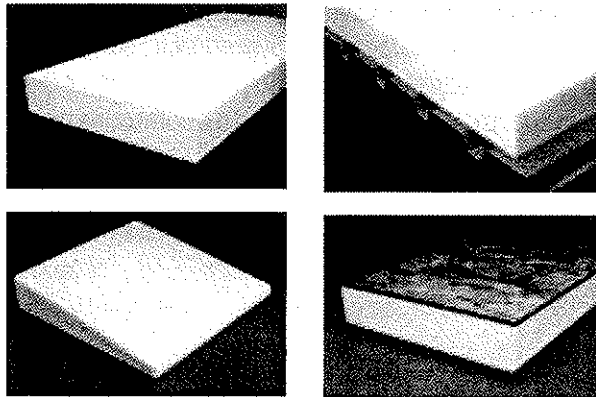
Trumbull's Built-Up Roofing Asphalt products are manufactured from selected petroleum based materials and processed to various softening points and penetrations, meeting required specifications as outlined in ASTM D-312. It is supplied in tank vehicles and cartons.

Typical Physical Properties

<u>Property</u>	Type I	Type II	<u>Range</u>	Type III	Type IV
Color	-----Dark Brown to Black-----				
Softening Point ASTM D-36	135-151°F	158-176°F		185-205°F	210-225°F
ASTM D-5 Penetration @ 77°F 100 grams, 5 sec.	18-60 dmm	18-40 dmm		15-35 dmm	12 - 25 dmm
ASTM D-5 Penetration @ 115°F 50 grams, 5 sec.	90-180 dmm	100 dmm max.		90 dmm max.	75 dmm max.
Flash Point (COC) ASTM D-92	----- 500°F minimum -----				
Solubility in trichloroethylene (%)	----- 99.0 minimum -----				

Sept-01

Asphalt Technology Lab - 7800 West 59th Street - Summit, IL 60501 - 708.594.6971



EPS Roof Insulation

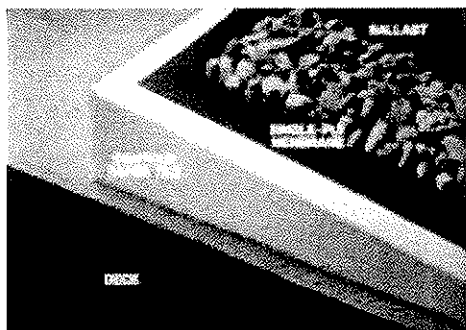
R-Control® Roof Insulations

R-Control Building Systems has been producing quality EPS roof insulations for over 30 years. R-Control insulation is reliable, cost effective, and compatible with major roofing materials and systems.

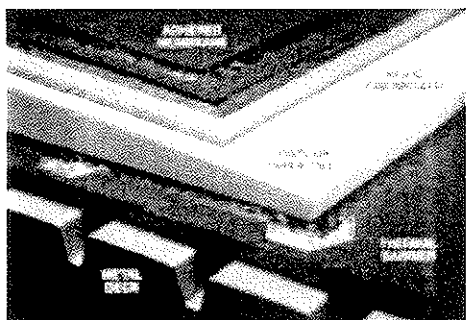
Expanded Polystyrene (EPS) stands the test of time. R-Control EPS insulation is a proven performer in roofing applications. Field studies of EPS roof installations 20 to 25 years old and older show that EPS performs well in real roof applications - as shown in the research report "Expanded Polystyrene Insulation for use in Built-Up and Single Ply Roofing Systems" by Rene M. Dupuis and Jerome G. Dees. Original R-Values and water tight membranes are the norm.

Perform® • Contour Taper Tile® • SpecLam™

are R-Control's high performance roof insulations. Major membrane manufacturers recognize their performance and approve the use of R-Control roof insulations with their systems.



R-Control's EPS Roof Insulations offer high performance and compatibility with major roofing materials and systems.



R-Control Quality Control

An in-plant Quality Control Program is in effect at all R-Control manufacturing facilities. Manufacturing procedures identified in quality control manuals include: material tracing, in-plant testing of product, random sampling of product by outside Underwriters Laboratories, and labeling of finished product for in-field identification.

R-Control's Quality Assurance Program is the most comprehensive in the EPS industry. It allows for complete code compliance, certification to critical physical properties, and roof listings from UL, FM, and others.

20 Year Thermal Warranty

Perform, Contour Taper Tile, and SpecLam Roof Insulations have no thermal drift as do CFC, HCFC, and HFC blown foams. R-Control Building Systems warrants the long-term "as manufactured" R-value of all its roof insulation systems. Contact R-Control Building Systems for more information regarding our EPS thermal performance warranty.



Environmental Advantages

R-Control EPS Roof insulations contain no CFC, HCFC, HFC, or formaldehyde. R-Control EPS is inert, non-nutritive and highly stable, and therefore will not decompose, decay, or produce undesirable gases or leachates. EPS is recyclable and safe for WTE Systems and landfills.

We encourage you to support recycling and energy conservation.

Perform[®]

R-Control Perform Series roof insulation provides the high long-term R-value of EPS and labor-saving face laminates. Suitable for use with all roofing membrane materials, they are compatible with loose laid and attached single-ply membranes, conventional built-up roofing, or modified bitumen systems.

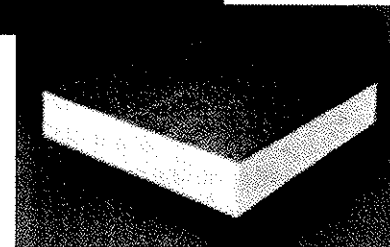
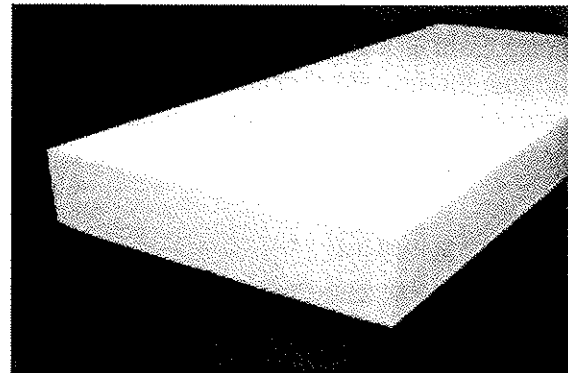
Perform I

Perform 1 is unfaced EPS. It is suitable for use with loosely laid single-ply membranes. It is also used with conventional BUR and mechanically or adhesively attached single-ply and modified bitumen membranes when field-applied coverboards are used. Boards are standard 4' x 4' and 4' x 8' sizes.

Perform 1 and Perform 3 R-values at 1 lb. density

Thickness, Inches	2.0	3.0	4.0	6.0	8.0	10.0
R-value @ 40° F	8.3	12.5	16.7	25.0	33.4	41.7
R-value @ 75° F	7.7	11.6	15.4	23.1	30.8	38.5

Note: Typical thicknesses and R-values are shown. Other thicknesses can be supplied to meet any R-value requirement.

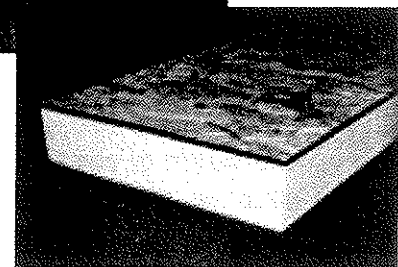
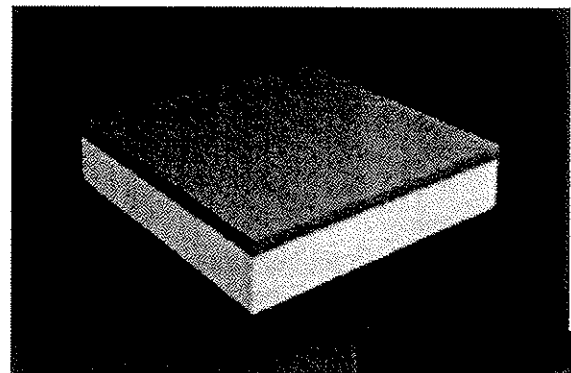


Foil or film facing available as

Perform 3

Perform 2

Perform 2 is EPS with a factory laminated fiberboard, perlite, glass faced gypsum board, or OSB face that gives greater panel integrity and reduces installation time. It's ideal for use with conventional BUR and mechanically or adhesively attached single-ply and modified bitumen membranes. Standard panel size is 4' x 4'. OSB faced panel size is 4' x 8'.



OSB facing available as

SpecLam[®]

Contour Taper Tile®

The Contour Taper Tile System was developed over 35 years ago with a dual purpose in mind: to drain and insulate dead-level roof decks. Manufactured from lightweight R-Control EPS, Contour Taper Tile is a value-engineered system that has been proven in new and re-roof applications all over the country. It adds insulation value that improves interior comfort and reduces the high energy costs of keeping a building comfortable. Contour Taper Tile also offers optimum design flexibility for the architect and saves the roofer/applicator both time and labor.

Why Drain a Roof?

The roofing industry accepts that long-term membrane performance and adequate roof drainage go hand in hand. Membrane manufacturers will not warranty the performance of their membrane without positive drainage. Building codes mandate positive roof drainage. The following is a list of problems created by ponding water on the roof deck:

Minimize leakage problems

Ponding water is a reservoir for moisture invasion. Imperfections such as fishmouths, unsealed laps, splits, cracks or holes caused by dropped tools will then leak.

Protect roof decks

Moisture will damage roof decks, such as wood or metal. Replacing rusted metal and rotted wood greatly increases the cost of reroofing.

Prevent ice damage

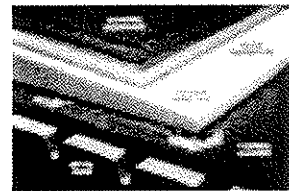
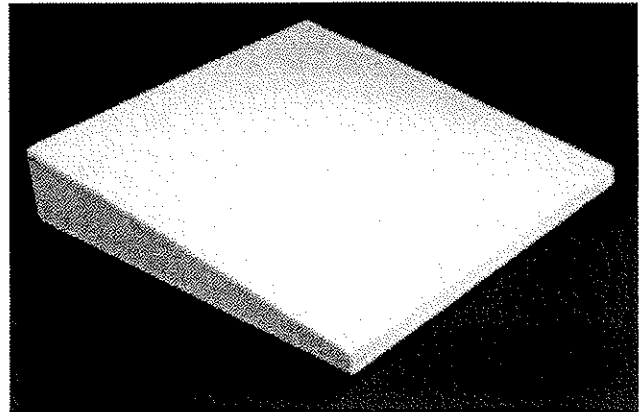
Frozen water attaches to the roof membrane and will move with changing temperatures. This movement can break down or tear the membrane, resulting in premature failure.

Prevent stress from ponding

The weight of ponding water can overstress a roof structure, causing structural members to sag, and in severe cases, causing roof collapse.

Makes repairs easier

It is virtually impossible to properly repair a roofing membrane that is underwater.



Acid Rain

Ponding water that is acidic reduces the membranes' ability to withstand ultra-violet light deterioration.

Equalize roof temperature

Wide temperature differentials occur between wet and dry areas on the roof surface. This differential stress causes warping and wrinkling of the membrane.

Protect membrane

In built-up applications, constant ponding and evaporation accelerate the degradation of asphalt. The membrane fails due to the loss of adequate bonding between the felts.

Eliminate vegetation growth

Stagnant water will promote vegetation growth, insect breeding, fungus formation and objectionable odors. Plants can root down through the membrane, leaving openings for moisture penetration.

Effective drainage is important.

Simply stated, all single-ply, modified bitumen, and BUR roofing membranes are less likely to leak and fail if water is not standing on top of them. Potential water damage to the building and its contents is thus eliminated.

Specify Contour Taper Tile

Contour Taper Tile's insulation value, code and agency rated assemblies, quality assurance programs, low cost, high component strength, and light weight set it above other tapered insulation products. When you consider our on-the-job service, national distribution, custom design flexibility and experience - we are the roofing professional's choice.

Contour Taper Tile is Custom Engineered

Contour Taper Tile is offered in a one-layer, integral compound system and a modular format. Integral compound taper means on-site lamination of EPS is unnecessary. Our modular format can be used to achieve a simple cricket lay-over system.

R-Control Building Systems offers complete specification and drainage design assistance. This is extremely valuable when calculating insulation requirements and slope design. We are available for on-site field assistance and measurements.

Contour Tapered Crickets

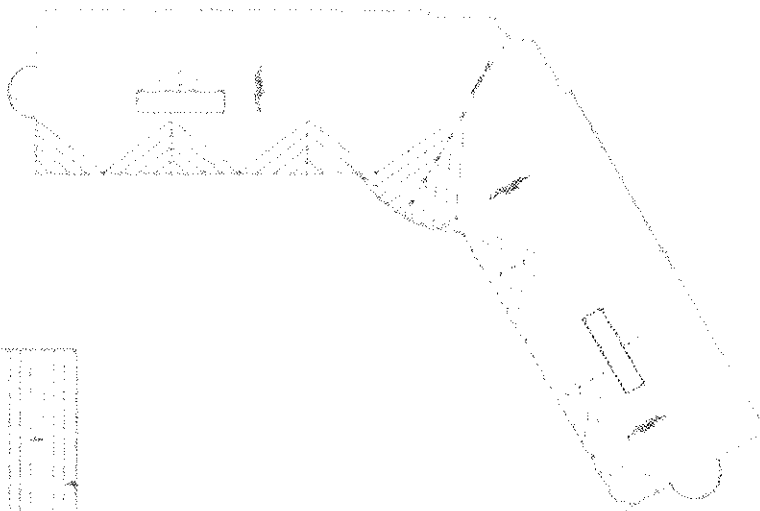
Cricket applications

Contour Taper Tile systems also offer pre-engineered, factory cut cricket and saddle systems. These systems provide effective and economical drainage on structurally sloped buildings (i.e. between drains and along walls between scuppers). Our crickets are compatible with standard EPS flat roof insulation, or other insulation types.

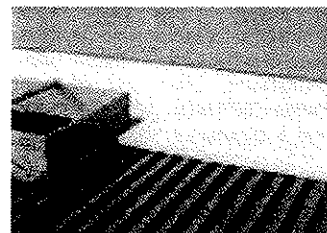
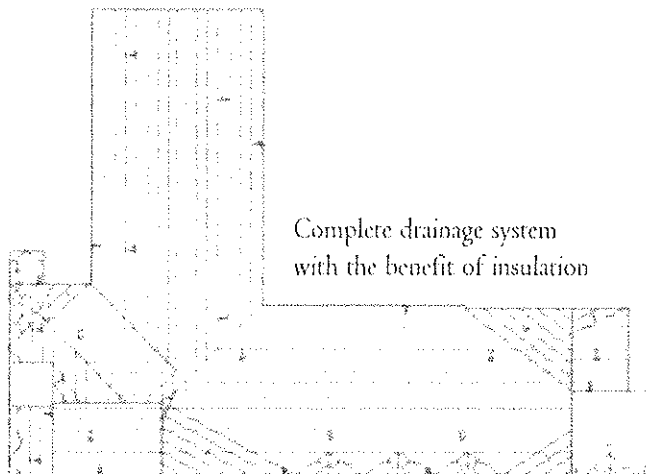
Compatibility with BUR and single-ply designs

The Contour Taper Tile System provides the drainage and insulation necessary under all commercial roofing systems. Contour Taper Tile has been used successfully in millions of square feet of single-ply, modified bitumen and BUR roofing.

Crickets provide positive drainage



Complete drainage system with the benefit of insulation



Installation - Perform[®] and Contour Taper Tile[™]

Preparation for New Construction and Reroof Application:

Sweep and remove all loose particles, debris, etc., from the roof deck surface. The roof deck should be sound, smooth, and free of moisture. If it is determined by the designer/owner that a vapor retarder is required, it should be applied prior to the Perform or Contour Taper Tile System Insulation. Follow the membrane manufacturer's recommended applications for a vapor retarder and its prescribed use with EPS insulation. Compatibility of all components is essential.

A. Application of Contour Taper Tile or Perform - Non-Nailable Roof Decks, (i.e. Concrete, Gypsum, Cementitious) - BUR, Modified Bitumens, or Adhered Single-Ply Membranes:

For best adhesion results, deck should be primed using an asphalt primer meeting ASTM D-41 at a rate of .4 gallons per 100 square feet. The deck shall be solid mopped with EVT temperature steep asphalt at a rate of 25# to 30# per 100 square feet. Mop an area large enough to accommodate one piece of Perform or Contour Taper Tile, care being taken not to contact insulation already in place. Allow asphalt to cool to approximately 225° to 250° F. EPS compatible cold adhesives, foam adhesives or similar that are UL and/or FM approved may also be used. Follow adhesive manufacturer's applications instructions.

Lay Perform or Contour Taper Tile with all joints tightly butted. Over all Perform or Contour Taper Tile thus installed, firmly adhere one layer of coverboard (minimum 1/2" wood fiber roof insulation board), ASTM C208 or a minimum 1/2" perlite roof insulation, ASTM C728 by back mopping the coverboard with EVT temperature steep asphalt, allowing the asphalt to cool to approximately 225° to 250° F before placing on Perform or Contour Taper Tile insulation. EPS compatible cold adhesives, foam adhesives or similar that are UL and/or FM approved may also be used. Follow adhesive manufacturer's applications instructions. Place cap board staggering joints from first layer of Perform or Contour Taper Tile, with joints tightly butted. Tape all joints with a minimum 4" wide organic tape or fiberglass roof insulation tape.

Apply BUR, Modified Bitumen, or Adhered Single-ply Membrane per manufacturer's specification for insulated roof decks. Contour Taper Tile may be factory laminated with minimum 1/2" perlite, or similar rigid facing, eliminating the need for an in-field coverboard layer.

Perform 2 has a factory applied coverboard (see page 3) and is provided under its standard specifications. Factory laminate facing should be called out in the job specifications by the architect.

R-Control manufacturers will use an approved adhesive compatible with the roof membrane assembly. Contact the local R-Control representative regarding the applicable facing material required for the roofing membrane system being used.

Board joint taping must still be done when membrane attachment is accomplished by means of hot asphalt over laminated Perform 2 and Contour Taper Tile.

B. Metal Roof Decks - BUR, Modified Bitumens, or Adhered Single-Ply Membranes:

A thermal barrier should first be applied [i.e., 1/2" gypsum board, an equivalent glass faced gypsum board ASTM C1177, or perlite roof insulation ASTM C728]. Local building codes must be followed regarding thermal barriers separating the Perform and Contour Taper Tile from the building interior. It is recommended that the thermal barrier layer be mechanically attached with a suitable Factory Mutual (FM) or Underwriters Laboratories (UL) listed fastener, in a pattern recommended by the fastener manufacturer, FM, or UL. Local building codes, when applicable, must be followed regarding fastener frequency.

With the thermal barrier thus applied, refer to application specifications for Perform and Contour Taper Tile for non-nailable decks.

An alternate method of attaching Perform and Contour Taper Tile may be mechanically fastening through all insulation layers into the structural roof deck. Perform and Contour Taper Tile must have coverboards (woodfiber, perlite or glass faced gypsum) in these assemblies. Fastener frequency will vary with the specific roofing membrane being used. Please consult the roofing membrane manufacturer for fastening recommendations. However, it is recommended that a fastener be used at a minimum of every 3.2 square feet for 4' x 4' boards and a minimum of every 4 square feet for 4' x 8' boards. Applications designed to meet FM I-90 or UL 1897 wind uplift require FM or UL listed fasteners, 1 every 2 square feet. Consult R-Control for recommended nailing patterns.

Some membrane manufacturers approve attachment with mechanical fasteners through their membrane and the insulation layer into the structural roof deck. Use Perform 1 or 3 only if the membrane manufacturer approves its use. Use fastener types compatible with the insulation materials and approved for use by code and the membrane manufacturer. Recommended fastener disk, 3" diameter minimum. Follow nailing frequency and patterns as recommended by FM or UL. Also, consult membrane manufacturer for minimum compressive strength required of the insulation material when this form of attachment is used.

Codes may approve the adhering of the thermal barrier by means of hot asphalt or cold adhesive. Please consult local codes, FM, or UL for these types of assemblies.

C. Nailable Roof Decks - Plywood, Cementitious Fiber (i.e., Tectum, Petrical) Roof Decks - BUR, Modified Bitumens and Adhered Single-Ply Membranes:

Apply a single layer of roofing felt starting at roof low point, lapping each course over the preceding one a minimum of 2". Nail the laps at 9" centers and down the longitudinal center of each felt. Nail two rows of nails with rows spaced approximately 11" apart and staggered on approximately 18" centers. Use nails recommended for the deck type. Follow NRCA recommended nailing standards. With the nailable deck thus prepared, refer to application specifications for Perform or Contour Taper Tile for non-nailable roof decks.

An alternative method of attaching Perform and Contour Taper Tile may be by mechanically fastening through all insulation layers into the structural roof deck. Perform and Contour Taper Tile must have coverboards (woodfiber, perlite, or glass faced gypsum) in these assemblies. Fastener frequency will vary with the specific roofing membrane being used. Contact R-Control for recommended nailing patterns.

D. Non-Nailable Roof Decks - Concrete, Gypsum, Cementitious, and Non-Rated Wood Type Roof Decks - Loosely Laid Ballasted Single-Ply Membranes:

Lay Perform or Contour Taper Tile loosely on the structural roof deck with all joints tightly butted. Apply loosely laid single-ply membrane and slip sheet per manufacturer's specifications for insulated roof decks. Perform 3 has a factory applied face, and is provided under its standard specifications. Note: Rubber type single-ply membranes, i.e., EPDM, neoprene, etc., may not require a separator sheet between the EPS insulation and the membrane. Consult manufacturer of single-ply membrane for specific recommendations when used over EPS insulation.

E. Metal Roof Decks - Loosely Laid Ballasted Single-Ply Membranes:

For metal deck construction, a thermal barrier should first be applied [i.e., 1/2" gypsum board, an equivalent glass faced gypsum board ASTM C1177, or perlite roof insulation, ASTM C728]. Local building codes must be followed regarding thermal barriers separating the Perform or Contour Taper Tile from the building interior. Lay thermal barrier loosely on metal roof deck, with all joints tightly butted. With a thermal barrier thus applied, refer to application specifications for Perform and Contour Taper Tile for "Non-Nailable Roof Decks - Loosely Laid Ballasted Single-Ply Membranes."

Specifications - Perform[®] and Contour Taper Tile[®]

Section 1: General

1.1 System description

Perform and Contour Taper Tile are EPS (expanded polystyrene) board roof insulations. They are suitable for use with single-ply, modified bitumens, and conventional BUR systems. These systems can be loosely laid and ballasted or attached. Contour Taper Tile is factory cut, labeled, and packaged. Shop drawings, showing placement of the system on the roof, are provided with Contour Taper Tile Systems.

1.2 Quality assurance

The roof insulation system will be 1.) a Perform Series Board or 2.) Contour Taper Tile System (Please Specify) manufactured by a duly licensed and approved manufacturer of R-Control Building Systems, 211 River Ridge Circle, #102, Burnsville, MN 55337. The manufacturer will have an in-plant quality assurance program complying with applicable Building Code and Listing agencies. The manufacturer must be capable of supplying UL Certified and Code Listed EPS. The manufacturer must be capable of supplying a 20-year thermal performance warranty on its EPS insulation.

1.3 References

R-Control EPS Roof Insulations can be manufactured to the following standards: ASTM C578, ASTM C1050, UL 790, UL 723, UL 263, UL 1256, FM, HUD Minimum Property Standards, the DOC/RCS Standards, ULC, CAN/CGSB-51.20, and all major model building codes.

1.4 Submittals

The Contour Taper Tile manufacturer will submit shop drawings for approval of the tapered system. Provide certificate evidence of compliance to a recognized in-plant 3rd party quality control process. Provide manufacturer's standard literature describing installation with the generic type of membrane being used.

Section 2: Products

2.1 Materials

Provide Perform Series or Contour Taper Tile as shown on plans. Furnish Contour Taper Tile factory-tapered insulation with a surface slope of 1/8", 3/16", 1/4" or special slope, as indicated on the plans. Minimum insulation thickness will be _____. The minimum insulation density for this project will be 0.9 _____, 1.15 _____, 1.35 _____, or 1.8 _____ pounds per cubic foot (ref. ASTM C578). All Contour Taper Tile insulation pieces will be marked to correspond with placement on the roof, as shown on the approved shop drawings.

Coverboards, when required, will be R-Control Building System approved meeting ASTM C208, ASTM C728, DOC PS2-92, ASTM C1177 or other applicable products and standards.

When required, roof tape for joint covering will be fibrous glass, or 15 lbs. organic roofing felt. Minimum width, 4".

Adhering asphalt to be ASTM D312 Type III Equiviscous Temperature (EVT) steep asphalt. Cold adhesives, foam adhesives, and mechanical fasteners used with R-Control EPS Roof Insulations must be compatible and approved by the membrane manufacturer, FM, or UL.

In metal deck construction, a thermal barrier such as 1/2" gypsum, an equivalent glass faced gypsum, or perlite boards should be used. Local building codes must be followed regarding thermal barriers separating the specified R-Control EPS Roof Insulation and the building interior.

Section 3: Execution

3.1 Preparation

Insulation must be applied to a sound, clean, and moisture-free deck surface. If it is determined by the architect/designer that a vapor retarder is required, it must be applied beneath the R-Control EPS Roof Insulation System.

3.2 Installation

Install the R-Control EPS Roof Insulation System per manufacturer's current TechData Installation instructions and other printed instructions provided.

3.3 Field quality control

Place the R-Control EPS Roof Insulation System on the roof where shown, or as directed by the approved shop drawings. Protect insulation from wind blow-off during all phases of construction. Temporary ballast and end-of-work-day water cut-offs must be used. Apply finish roofing membrane over insulation as soon as practical.

3.4 Limitations of use

EPS contains a flame retardant additive but is considered combustible and should not be stored near any open flame or source of ignition. Do not install or use EPS with coal tar pitch or highly solvent extended mastics without adequate separation. Max operating temperature for R-Control EPS is 165°F (74°C). Consult R-Control for suggested assembly specifications.

For information on how to specify R-Control EPS Roof Insulations in class rated assemblies, contact R-Control Building Systems.

Consult R-Control EPS brochure for additional performance characteristics, physical properties and use limitations.

Industry Affiliations:
SPRI, NRCA, SIPA,
AIA, NAHB, EPSMA



R-Control Building Systems
(800) 255-0176 General Information
(800) 255-3908 Technical Information
www.r-control.com

Informational Guide Specification

DuPont™ Tyvek® CommercialWrap® Air Barrier/Weather Resistant Barrier

Section 07270

PART 1 GENERAL

1.01 Summary:

A. Includes but not limited to:

- 1) Furnish and install air barrier/weather resistant barrier over exterior of wall sheathing at all locations regardless of whether or not indicated on drawings to protect exterior sheathing and interior walls.

1.02 Related Sections

- A. Section 05400 – Cold Formed Metal Framing
- B. Section 06160 – Sheathing
- C. Section 07610 – Flashing and Sheet Metal

1.03 References:

- A. American Society for Testing and Materials
- B. Technical Association of the Pulp and Paper Industry
- C. American Association of Textile Chemists and Colorists

1.04 Submittals:

- A. General: Submit each item in this Article according to the conditions of the Contract and Division I Specifications Sections.
- B. Product Data: Submit product specifications, technical data and installation instructions of manufacturer equaling or exceeding those specified.

1.05 Quality Assurance

A. Qualifications:

1. Installer with successful experience in the installation of air barrier/secondary weather resistant barriers.

- B. Install job mock-up using specified air barrier/secondary weather resistant barrier with system of fastening and taping seams as per manufacturer's instructions. Obtain architect's approval of system for appearance and workmanship standard.

PART 2 – PRODUCTS

2.01 Manufacturers

A. Acceptable Manufacturer:

**DuPont Weatherization Systems
4417 Lancaster Pike
Building 728
Wilmington, DE 19805**

**Contact:
800-448-9835

www.tyvek.com**

2.02 Materials

A. **DuPont™ Tyvek® CommercialWrap®:** A flash spunbonded olefin, non-woven, non-perforated secondary weather resistant barrier.

B. Performance Characteristics

1. AATCC–127, Water Penetration Resistance, exceeded at 280
2. TAPPI T–460, Gurley Hill (sec/100cc) Air infiltration at >1500 seconds
3. ASTM E 96 Method B(g/m2–24hr.)Water vapor transmission of 200
4. TAPPI T-41D, Basis weight of 2.7oz/yd
5. ASTM E96 Method B, Water Vapor Transmission, 28 perms
6. ASTM E1677, Air Retarder Material Standard Specification, Type I air barrier

C. Sealing Tape/Fasteners

1. **DuPont™ Tyvek® Tape**, DuPont Weatherization Systems.
2. For steel frame construction: **DuPont™ Tyvek® Wrap Cap Screws**, DuPont Weatherization Systems. 1 5/8" rust resistant screws with 2" diameter plastic cap
3. For wood frame construction: **DuPont™ Tyvek® Wrap Caps**, DuPont Weatherization Systems. Nails with large heads or plastic washers.
4. Caulks or Sealants: polyurethane or elastomeric sealants
 1. Available Products:
 - a. OSI® Quad Pro-Series®, solvent release butyl rubber sealant
 - b. DAP® Dynaflex 230™
 - c. Other products as approved and recommended by air barrier/weather resistant barrier manufacturer.

PART 3 - EXECUTION

3.01 Installation

- A. A. Install Air Barrier over exterior side of exterior wall sheathing.
 - 1. Install Air Barrier after sheathing is installed and before windows and doors are installed. Install lower level barrier prior to upper layers to ensure proper shingling of layers.
 - 2. Overlap Air Barrier at corners of building by a minimum of 12 inches.
 - 3. Overlap Air Barrier vertical seams by a minimum of 6 inches.
 - 4. Ensure barrier is plum and level with foundation, and unroll extending Air Barrier over window and door openings.
 - 5. Attach Air Barrier to wood, insulated sheathing board or exterior gypsum with plastic cap nails every 12" to 18" on vertical stud line with wood stud framing, and screws with washers to metal stud framing. When attaching to masonry, use adhesive recommended by manufacturer.
 - 6. Prepare window and door rough openings as follows:
 - a. Prepare each window rough opening by cutting a modified "I" pattern in the Air Barrier.
 - 1. Horizontally cut Air Barrier along bottom of header.
 - 2. Vertically cut Air Barrier down the center of window openings from the top of the window opening down to 2/3 of the way to the bottom of the window openings.
 - 3. Diagonally cut Air Barrier from the bottom of the vertical cut to the left and right corners of opening.
 - 4. Fold side and bottom flaps into window opening and fasten every 6 inches. Trim off excess.
 - b. Prepare each rough door opening by cutting a standard "I" pattern in the Air Barrier.
 - 1. Horizontally cut Air Barrier along bottom of door frame header and along top of sill.
 - 2. Vertically cut Air Barrier down the center of door openings from the top of the door opening (header) down to the bottom of the door opening (sill).
 - 3. Fold side flaps inside around door openings and fasten every 6 inches. Trim off excess.
 - 7. Tape all horizontal and vertical seam of Air Barrier with DuPont™ Tyvek® Tape.
 - 8. Seal all tears and cuts in Air Barrier with DuPont™ Tyvek® Tape.

End of Section

